



MVP130-AV-FXS

Analog Voice/IP Gateway

Quick Start Guide



Quick Start Guide

MultiVOIP MVP130-AV-FXS

S000355A, Revision A

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MultiVOIP Quick Start Guide

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Introduction

This manual will get your MultiVOIP up and running quickly. For more details, see the MultiVOIP User Guide.

Safety Warnings

Lithium Battery Caution

A lithium battery on the voice/fax channel board provides backup power for the timekeeping capability. The battery has an estimated life expectancy of ten years.

When the battery starts to weaken, the date and time may be incorrect. If the battery fails, the board must be sent back to Multi-Tech Systems for battery replacement.

Warning: There is danger of explosion if the battery is incorrectly replaced.

Safety Warnings Telecom

1. Never install telephone wiring during a lightning storm.
2. Never install a telephone jack in wet locations unless the jack is specifically designed for wet locations.
3. This product is to be used with UL and cUL listed computers.
4. Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
5. Use caution when installing or modifying telephone lines.
6. Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electrical shock from lightning.
7. Do not use a telephone in the vicinity of a gas leak.
8. To reduce the risk of fire, use only 26 AWG or larger telecommunication line cord.

MultiVOIP Startup Tasks

Task	Summary
● Collecting Phone/IP Details (<i>vital!</i>)	The MultiVOIP must be configured to interface with your particular phone system and IP network. To do so, certain details must be known about those phone and IP systems.
● Placement	Decide where you'll mount the voip.
● Command/Control Computer Setup: Specs & Settings	Some modest minimum specifications must be met. A COM port must be set up.
● Hookup	Connect power, phone, and data cables per diagram.
● Software Installation	This is the configuration program. It's a standard Windows software installation.

Startup Task	Summary
● Phone/IP Starter Configuration	You will enter phone numbers and IP addresses. You'll use default parameter values where possible to get the system running quickly.
● Phonebook Starter Configuration	The phonebook is where you specify how calls will be routed. To get the system running quickly, you'll make phonebooks for just two voip sites.
● Connectivity Test	You'll find out if your voip system can carry phone calls between two sites. That means you're up and running!
● Troubleshooting	Detect and remedy any problems that might have prevented connectivity.

Phone/IP Details *Required* Before Installation

The MultiVOIP will interface with both the IP network and the phone system. You must gather information about the IP network and about the phone system so that the MultiVOIP can be configured to operate with them properly.

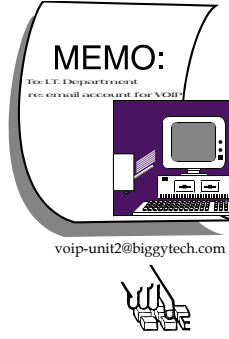
Gather IP Information

➤	Ask your computer network administrator.
	 IP Network Parameters: Record for each VOIP Site in System
	• IP Address
	• IP Mask
	• Gateway
	• Domain Name Server (DNS) Info <i>(not implemented; for future use)</i>

Phone/IP Details *Absolutely Needed*
Gather Telephone Information

➤	Analog Phone Parameters <i>Ask phone company or telecom manager.</i>
	 Analog Telephony Interface Parameters: Record for this VOIP Site
	• Interface type (or “signaling”) used? FXS
	• Determine whether the line will be used for a phone, fax, or KTS (key telephone system)

Obtain Email Address for VOIP (Optional)

<i>required if log reports of VOIP call traffic are to be sent by email</i>	Optional
SMTP Parameters Preparation Task: Ask Mail Server administrator to set up email account (with password) for the MultiVOIP unit itself. Be sure to give a unique identifier to each individual MultiVOIP unit.	 voip-unit2@biggytech.com Get the IP address of the mail server computer, as well.

Identify Remote VOIP Site to Call

When you're done installing the MultiVOIP, you'll want to confirm that it is configured and operating properly. To do so, it's good to have another voip that you can call for testing purposes. You'll want to confirm end-to-end connectivity. You'll need IP and telephone information about that remote site.

If this is the very first voip in the system, you'll want to coordinate the installation of this MultiVOIP with an installation of another unit at a remote site.

Identify VOIP Protocol to be Used

Will you use H.323, SIP, or SPP? Each has advantages and disadvantages. Although it is possible to mix protocols in a single VOIP system, it is highly desirable to use the same VOIP protocol for all VOIP units in the system. SPP is a non-standard protocol developed by Multi-Tech. SPP is not compatible with the "Proprietary" protocol used in Multi-Tech's earlier generation of voip gateways.

Placement

Mount your MultiVOIP in a safe and convenient location where cables for your network and phone system are accessible. Detailed instructions for unpacking and cabling the MVP130 are in *Chapter 3: Mechanical Installation & Cabling* of the User Guide.

Command/Control Computer Setup (Specs & Settings)

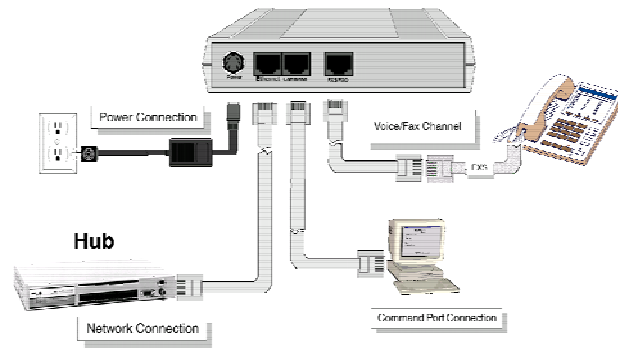
The computer used for command and control of the MultiVOIP

- (a) must be an IBM-compatible PC,
- (b) must use a Microsoft operating system,
- (c) must have an available serial COM port.

The configuration tasks and control tasks the PC will have to do with the MultiVOIP are not especially demanding. Still, we recommend using a reasonably new computer. The computer that you use to configure your MultiVOIP need not be dedicated to the MultiVOIP after installation is complete.

COM port on controller PC. You'll need an available COM port on the controller PC. You'll need to know which COM port is available for use with the MultiVOIP (COM1, COM2, etc.).

Hookup for MVP130



Load MultiVOIP Control Software onto PC

For more details, see *Chapter 4: Software Installation* in User Guide.

1. MultiVOIP must be properly cabled. Power must be turned on.
2. Insert MultiVOIP CD into drive. Allow 10-20 seconds for Autorun to start. If Autorun fails, go to **My Computer | CD ROM drive | Open**. Click **Autorun** icon.
3. At first dialog box, click **Install Software**.
4. At 'welcome' screen, click **Next**.
5. Follow on-screen instructions. Accept default program folder location and click **Next**.
6. Accept default icon folder location. Click **Next**. Files will be copied.
7. Select available COM port on command/control computer.
8. At completion screen, click **Finish**.
9. At the prompt "Do you want to run MultiVOIP Configuration?," click **No**. Software installation is complete.

Phone/IP Starter Configuration

For full details, see
*Chapter 6: Technical Configuration for
Analog/BRI MultiVOIPs* in User Guide

1. Open MultiVOIP program: **Start** | **MultiVOIP xxx** | **Configuration**.
2. Go to **Configuration** | **IP**. Enter the IP parameters for your voip site.
3. Do you want to configure and operate the MultiVOIP unit using the web browser GUI? (It has the same functionality as the local Windows GUI, but offers remote access.)
If NO, skip to step 5.
If YES, continue with step 4.

4. **Enable Web Browser GUI (Optional).** To do configuration and operation procedures using the web browser GUI, you must first enable it. To do so, follow these steps. (Browser must be Internet Explorer 6.0 or above; or Netscape 6.0 or above.)

A. Be sure an IP address has been assigned to the MultiVOIP unit (this must be done in the MultiVOIP Windows GUI).	B. Save Setup in Windows GUI.
C. Close the MultiVOIP Windows GUI.	D. Install Java program from MultiVOIP product CD. (Must be Java Runtime Environment 1.4.0_01 or above.) <i>NOTE: Required on first use of Web Browser GUI only.</i>
E. Open web browser. (Note: The PC being used must be connected to and have an IP address on the same IP network that the voip is on.)	

4. (cont'd) Enable Web Browser GUI (Optional)

F. Browse to IP address of MultiVOIP unit.	G. If username and password have been established, enter them when prompted by voip.
H. Use web browser GUI to configure or operate voip.	
Need more info?	See "Web Browser Interface" in <i>Operation & Maintenance</i> chapter of User Guide (on CD).

Once you've begun using the web browser GUI, you can go back to the MultiVOIP Windows GUI at any time. However, you must log out of the web browser GUI before using the MultiVOIP Windows GUI.

Phone/IP Starter Configuration (continued)

5. Go to **Configuration | Voice/Fax**. Select **Coder** | "Automatic." At the right-hand side of the dialog box, click **OK**. If you know any specific parameter values that will apply to your system, enter them. Click **OK** to exit from the dialog box.
6. Enter telephone system information.
Go to **Configuration | Interface**. Enter parameters obtained from phone company or PBX administrator.
7. Go to **Configuration | Regional Parameters**. Select the **Country/Region** that fits your situation. Click **OK** and confirm. Click **OK** to exit from the dialog box.
8. Do you want the phone-call logs produced by the MultiVOIP to be sent out by email (to your Voip Administrator or someone else)?
If NO, skip to step 10.
If YES, continue with step 9.
9. Go to **Configuration | SMTP**.
SMTP lets you send phone-call log records to the Voip Administrator by email. Select **Enable SMTP**. You should have already obtained an email address for the MultiVOIP itself (this serves as the origination email account for email logs that the MultiVOIP can email out automatically).

Enter this email address in the “Login Name” field.
Type the password for this email account.

Enter the IP address of the email server where the MultiVOIP’s email account is located in the “Mail Server IP Address” field.

Typically the email log reports are sent to the Voip Administrator but they can be sent to any email address. Decide where you want the email logs sent and enter that email address in the “Recipient Address” field.

Whenever email log messages are sent out, they must have a standard Subject line. Something like “Phone Logs for Voip N” is useful. If you have more than one MultiVoip unit in the building, you’ll need a unique identifier for each one (select a useful name or number for “N”). In this “Subject” field, enter a useful subject title for the log messages.

In the “Reply-To Address” field, enter the email address of your Voip Administrator.

10. Go to **Configuration | Logs**.
Select "Enable Console Messages."

To allow log reports by email (if desired), click **SMTP**. Click **OK**.

To do logging with a SysLog client program, click on "SysLog Server – Enable" in the **Logs** screen. To implement this function, you must install a SysLog client program. For more info, see the "SysLog Server Functions" section of the *Operation & Maintenance* chapter of the **User Guide**.

11. Enable premium (H.450) telephony features.

Go to **Supplementary Services**. Select any features to be used.

For Call Hold, Call Transfer, & Call Waiting, specify the key sequence that the phone user will press to invoke the feature. For Call Name Identification, specify the allowed name types to be used and a caller-id descriptor.

If Call Forwarding is to be used, enable this feature in the Add/Edit Inbound Phone Book screen.

After making changes, click on **OK** in the current configuration screen before moving on to the next configuration screen.

Phone/IP Starter Configuration (continued)

12. Go to **Save Setup | Save and Reboot**. Click OK.
This will save the parameter values that you have just entered.
The MultiVOIP's "BOOT" LED will light up while the configuration file is being saved and loaded into the MultiVOIP. Don't do anything to the MultiVOIP until the "BOOT" LED is off (a loss of power at this point could cause the MultiVOIP unit to lose the configuration settings you have made).

END OF PROCEDURE.

Phonebook Starter Configuration (*with remote voip*)

If the topic of voip phone books is new to you, it may be helpful to read the PhoneBook Tips section (page 43) before starting this procedure.

To do this part of the quick setup, you need to know of another voip that you can call to conduct a test. It should be at a remote location, typically somewhere outside of your building. You must know the phone number and IP address for that site. We are assuming here that the MultiVOIP will operate in conjunction with a PBX.

You must configure both the Outbound Phonebook and the Inbound Phonebook. A starter configuration only means that two voip locations will be set up to begin the system and establish voip communication.

Outbound Phonebook

1. Open the MultiVOIP program
Start | MultiVOIP xxx | Configuration
2. Go to **Phone Book | PhoneBook Modify | Outbound Phonebook | Add Entry.**
3. On a sheet of paper, write down the calling code of the remote voip (area code, country code, city code, etc.) that you'll be calling.

Follow the example that best fits your situation.

**North America,
Long-Distance
Example**

Technician in Seattle (area 206) must set up one voip there, another in Chicago (area 312, downtown).

Answer: Write down **312**.

**Euro, National Call
Example**

Technician in central London (area 0207) to set up voip there, another in Birmingham (area 0121).

Answer: Write down **0121**.

Euro, International Call Example

Technician in Rotterdam (country 31; city 010) to set up one voip there, another in Bordeaux (country 33; area 05).

Answer: write down **3305**.

4. Suppose you want to call a phone number outside of your building using a phone station that is an extension from your PBX system (if present). What digits must you dial? Often a "9" or "8" must be dialed to "get an outside line" through the PBX (i.e., to connect to the PSTN). Generally, "1" or "11" or "0" must be dialed as a prefix for calls outside of the calling code area (long-distance calls, national calls, or international calls).

On a sheet of paper, write down the digits you must dial before you can dial a remote area code.

4. (cont'd)

**North America,
Long-Distance
Example**

Seattle-Chicago system.
Seattle voip works with PBX that uses "8" for all voip calls. "1" must immediately precede area code of dialed number.

Answer: write down **81**.

**Euro, National Call
Example**

London/Birming. system.
London voip works with PBX that uses "9" for all out-of-building calls whether by voip or by PSTN. "0" must immediately precede area code of dialed number.

Answer: write down **90**.

Euro, International Call Example

Rotterdam/Bordeaux system.
Rotterdam voip works with PBX where "9" is used for all out-of-building calls. "0" must precede all international calls.

Answer: write down **90**.

5. In the “Destination Pattern” field of the **Add/Edit Outbound Phonebook** screen, enter the digits from step 4 followed by the digits from step 3.

**North America,
Long-Distance
Example**

Seattle-Chicago
system.

Answer: enter **81312**
as Destination Pat-
tern in Outbound
Phone-book of Seattle
voip.

**Euro, National Call
Example**

London/Birming
system.

Leading zero of Birmingham
area code is dropped when
combined with national-
dialing access code. (Such
practices vary by country.)

Answer: enter **90121** as
Destination Pat-tern in
Outbound Phonebook of
London voip.
Not 900121.

5. (cont'd)

Euro, International Call Example

Rotterdam/Bordeaux system.

Answer: enter **903305** as Destination
Pattern in Outbound Phonebook of Rotterdam
voip.

6. Tally up the number of digits that must be dialed to reach the remote voip site (including prefix digits of all types). Enter this number in the "Total Digits" field.

North America, Long-Distance Example

Seattle-Chicago
system.

To complete Seattle-to-Chicago call, **81312** must be followed by the 7-digit local phone number in Chicago.

Answer: enter **12** as number of Total Digits in Outbound Phonebook of Seattle voip.

Euro, National Call Example

London/Birming.
system.

To complete London-to-Birmingham call, **90121** must be followed by the 7-digit local phone number in Birmingham.

Answer: enter **12** as number of Total Digits in Outbound Phonebook of London voip.

6. (cont'd)

Euro, International Call Example

Rotterdam/Bordeaux system.

To complete Rotterdam-to-Bordeaux call, **903305** must be followed by 8-digit local phone number in Bordeaux.

Answer: enter **14** as number of Total Digits in Outbound Phonebook of Rotterdam voip.

7. In the “Remove Prefix” field, enter the initial PBX access digit (“8” or “9”).

**North America,
Long-Distance
Example**

Seattle-Chicago system.

Answer: enter **8** in
“Remove Prefix” field
of Seattle Outbound
Phonebook.

**Euro, National Call
Example**

London/Birming.
system.

Answer: enter **9** in
“Remove Prefix” field
of London Outbound
Phonebook.

Euro, International Call Example

Rotterdam/Bordeaux system.

Answer: enter **9** in “Remove Prefix” field of
Outbound Phonebook for Rotterdam voip.

Some PBXs will not ‘hand off’ the “8” or “9” to the voip.
But for those PBX units that do, it’s important to enter the
“8” or “9” in the “Remove Prefix” field in the Outbound
Phonebook. This precludes the problem of having to
make two inbound phonebook entries at remote voips,

one to account for situations where “8” is used as the PBX access digit, and another for when “9” is used.

8. Select the voip protocol that you will use (H.323 or SIP).
9. Click **OK.** to exit from the **Add/Edit Outbound Phonebook** screen.

Inbound Phonebook

1. Open the MultiVOIP program.
Start | MultiVOIP xxx | Configuration
2. Go to **Phone Book | PhoneBook Modify | Inbound Phonebook | Add Entry**.
3. In the “Remove Prefix” field, enter your local calling code (area code, country code, city code, etc.) preceded by any other “access digits” that are required to reach your local site from the remote voip location(think of it as though the call was being made through the PSTN – even though it will not be).

3. (cont'd)

**North America,
Long-Distance
Example**

Seattle-Chicago
system.

Seattle is area 206.
Chicago employees
must dial 81 before
dialing any Seattle
number on the voip
system.

Answer: 1206 is prefix
to be removed by local
(Seattle) voip.

**Euro, National Call
Example**

London/Birming.
system.

Inner London is 0207
area. Birmingham
employees must dial 9
before dialing any
London number on the
voip system.

Answer: 0207 is prefix
to be removed by local
(London) voip.

3. (cont'd)

Euro, International Call Example

Rotterdam/Bordeaux system.

Rotterdam is country code 31, city code 010.

Bordeaux employees must dial 903110 before dialing any Rotterdam number on the voip system.

Answer: 03110 is prefix to be removed by local (Rotterdam) voip.

4. In the “Add Prefix” field, enter any digits that must be dialed from your local voip to gain access to the PSTN.

**North America,
Long-Distance
Example**

Seattle-Chicago
system.

On Seattle PBX, “9” is
used to get an outside
line.

Answer: **9** is prefix to
be added by local
(Seattle) voip.

**Euro, National Call
Example**

London/Birming.
system.

On London PBX, “9” is
used to get an outside
line.

Answer: **9** is prefix to be
added by local
(London) voip.

4. (cont'd)

Euro, International Call Example

Rotterdam/Bordeaux system.

On Rotterdam PBX, "9" is used to get an outside line.

Answer: **9** is prefix to be added by local (Rotterdam) voip.

5. In the "Channel Number" field, enter "0." A zero value means the voip unit will assign the call to an available channel. If desired, specific channels can be assigned to specific incoming calls (i.e., to any set of calls received with a particular incoming dialing pattern).

6. In the “Description” field, it is useful to describe the ultimate destination of the calls. For example, in a New York City voip system, “incoming calls to Manhattan office,” might describe a phonebook entry, as might the descriptor “incoming calls to NYC local calling area.” The description should make the routing of calls easy to understand. (40 characters max.)

North America, Long-Distance Example Seattle-Chicago system. Possible Description:. Free Seattle access, all employees	Euro, National Call Example London/Birming. system. Possible Description:. Local-rate London access, all empl.
Euro, International Call Example Rotterdam/Bordeaux system. Possible Description:. Local-rate Rotterdam access, all empl.	

Phonebook Starter Config.

7. Repeat steps 2-6 for each inbound phonebook entry. When all entries are complete, go to step 8.
8. Click **OK** to exit the inbound phonebook screen.
9. Click on **Save Setup**. Highlight **Save and Reboot**. Click **OK**.

Your starter inbound phonebook configuration is complete.

Phonebook Tips

Preparing the phonebook for your voip system is a complex task that, at first, seems quite daunting. These tips may make the task easier.

1. **Use Dialing Patterns, Not Complete Phone Numbers.**
You will not generally enter complete phone numbers in the voip phonebook. Instead, you'll enter "destination patterns" that involve area codes and other digits. If the destination pattern is a whole area code, you'll be assigning all calls to that area code to go to a particular voip which has a unique IP address. If your destination pattern includes an area code plus a particular local phone exchange number, then the scope of calls sent through your voip system will be narrowed (only calls within that local exchange will be handled by the designated voip, not all calls in that whole area code). In general, when there are fewer digits in your destination pattern, you are asking the voip to handle calls to more destinations.

2. **The Four Types of Phonebook Digits Used.**

Important!

“Destination patterns” to be entered in your phonebook will generally consist of:

- (a) calling area codes,
- (b) access codes,
- (c) local exchange numbers, and
- (d) specialized codes.

Although voip phonebook entries may look confusing at first, it’s useful to remember that all the digits in any phonebook entry must be of one of these four types.

- (a) **calling area codes.** There are different names for these around the world: “area codes,” “city codes,” “country codes,” etc. These codes, are used when making non-local calls. They always precede the phone number that would be dialed when making a local call.
- (b) **access codes.** There are digits (*PSTN access codes*) that must be dialed to gain access to an operator, to access the publicly switched ‘long-distance’ calling system(North America), to access the publicly switched ‘national’ calling system (Europe and elsewhere), or to access the

publicly switched 'international' calling system (worldwide).

There are digits (*PBX access codes*) that must be dialed by phones connected to PBX systems or key systems. Often a "9" must be dialed on a PBX phone to gain access to the PSTN ('to get an outside line'). Sometimes "8" must be dialed on a PBX phone to divert calls onto a leased line or to a voip system. However, sometimes PBX systems are 'smart' enough to route calls to a voip system without a special access code (so that "9" might still be used for all calls outside of the building).

There are also digits (*special access codes*) that must be dialed to gain access to a particular discount long-distance carrier or to some other closed or proprietary telephone system.

- (c) **local exchange numbers.** Within any calling area there will be many local exchange numbers. A single exchange may be used for an entire small town. In cities, an exchange may be used for a particular neighborhood (although exchanges in cities do not always cover easily discernible areas). Organizations like businesses, governments, schools, and universities are also

commonly assigned exchange numbers for their exclusive use. In some cases, these organizational-assigned exchanges can become non-localized because the exchange is assigned to one facility and linked, by the organization's private network, to other sometimes distant locations.

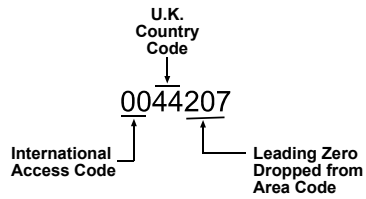
- (d) **specialized codes.** Some proprietary voip units assign, to sites and phone stations, numbers that are not compatible with PSTN numbering. This can also occur in PBX or key systems. These specialized numbers must be handled on a case-by-case basis.

3. Knowing When to Drop Digits.

When calling area codes and access codes are used in combination, a leading “1” or “0” must sometimes be dropped.

Example Phonebook Entry ➤

Area code for Inner London is listed as “0207.” However, in international calls the leading “0” is dropped.



4. Using a Comma.

Commas are used in telephone dialing strings to indicate a pause to allow a dial tone to appear (common on PBX and key systems). Commas may be used only in the "Add Prefix" field of the Inbound Phonebook.

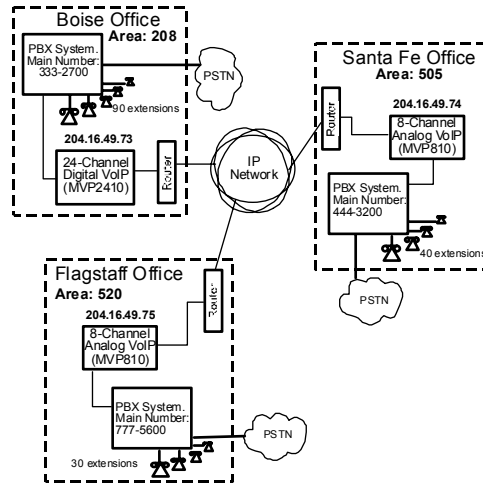
Detail**,****= 1-second pause****in many PBX systems**
(not needed in all)

5. **Ease of Use.** The phonebook setup determines how easy the voip system is to use. Generally, you'll want to make it so dialing a voip call is very similar to dialing any other number (on the PSTN or through the PBX).

6. **Avoid Unintentional Calls to Official/Emergency Numbers.** Dialing a voip call will typically be somewhat different than ordinary dialing. Because of this, it's possible to set up situations, quite unwittingly, where phone users may be predisposed to call official numbers without intending to do so. Conversely, a voip/PBX system might also make it difficult to place an official/emergency call when one intends to do so. Study your phonebook setup and do some test-dialing on the system to avoid these pitfalls.
7. **Inbound/Outbound Pattern Matching.** In general, the Inbound Phonebook entries of the local voip unit will match the Outbound Phonebook entries of the remote voip unit. Similarly, the Outbound Phonebook entries of the local voip unit will match the Inbound Phonebook entries of the remote voip unit. There will often be non-matching entries, but it's nonetheless useful to notice the matching between the phonebooks.
8. **Simulating Network in-lab/on-benchtop.** One common method of configuring a voip network is to set up a local IP network in a lab, connect voip units to it, and perhaps have phones connected on channel banks to make test calls.

Phonebook Example

One Common Situation. This company has offices in three different cities. The PBX units all operate alike. Notably, they all give access to outside lines using “9.” They all are ‘smart’ enough to identify voip calls without using a special access digit (“8” is used in some systems). Finally, the system operates so that employees in any office can dial employees in any other office using only three digits. Here we’ll consider the phonebooks needed for that system.



Phonebook Example (cont'd)

Inbound Phonebook Discussion

Each **Inbound Phonebook** contains two entries. The first entry (4 digits) specifies how incoming calls from the other voip sites will be handled if they go out onto the local PSTN. Essentially, all those calls come to the receiving voip with a pattern beginning with **1+area code**. The local voip removes those four digits because they aren't needed when dialing locally. The local voip attaches a "9" at the beginning of the number to get an outside line. The PBX then completes the call to the PSTN.

The second **Inbound** Phonebook entry (8 digits) is for receiving calls from company employees in the other two cities. The out-of-town employee simply dials 3 digits.

The first of the three digits is uniquely used at each site and so acts as a destination pattern (Boise extensions are 7xx, Santa Fe extensions 2xx, Flagstaff extensions 6xx).

As the remote voip sends out the call, it automatically attaches all of the foregoing digits that would normally have to be dialed using the PSTN.

The local (receiving) voip sees the extended pattern in its Inbound Phonebook and so strips off the long telltale pattern of digits needed for 3-digit calling. It must finally add back the last digit before handing the call to the PBX, which completes the call to a specific extension.

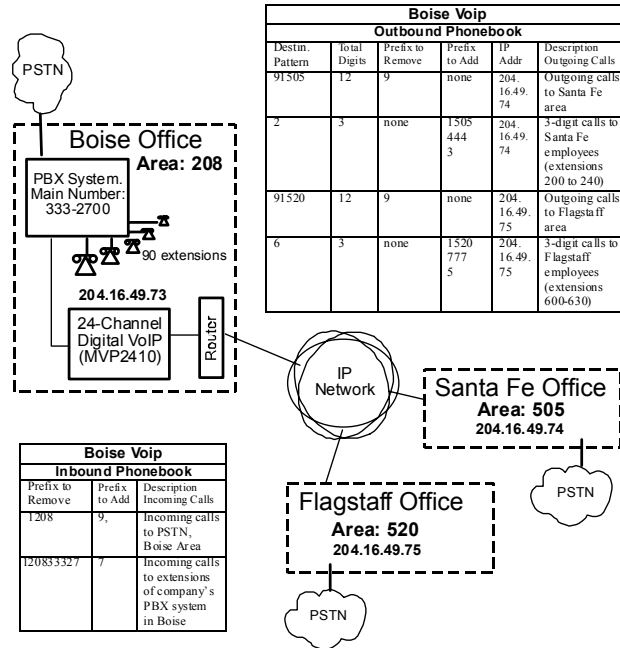
Outbound Phonebook Discussion

Each Outbound Phonebook contains two pairs of entries, two entries for each remote site. Whenever an out-of-town employee dials a 12-digit number beginning with the listed 5-digit destination pattern (9+1+area code) of another company location, the PBX hands the call to the voip system. The local voip strips off the "9" and directs the call to the

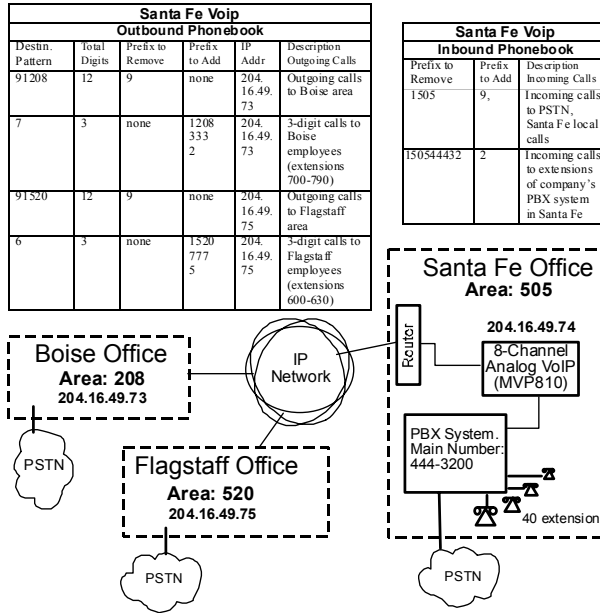
IP address of the remote voip. The remote voip receives the call and hands it to its PBX. The PBX then completes the call to the PSTN.

The one-digit Outbound destination patterns pertain to 3-digit calling between company employees.

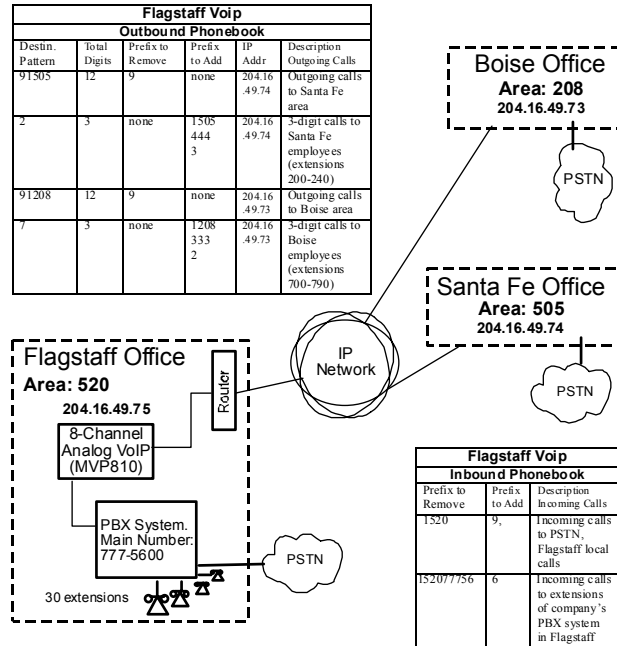
Phonebook Example: Boise Phonebooks



Phonebook Example: Santa Fe Phonebooks



Phonebook Example: Flagstaff Phonebooks



Outbound Phonebook Worksheet

Voip Location/ID:

Outbound Phonebook				
Dest. n.	Total Digits	Prefix to Remove	Prefix to Add	Description

Other Details:

Inbound Phonebook Worksheet

Voip Location/ID:

Inbound Phonebook		
Prefix to Remove	Prefix to Add	Description Incoming Calls

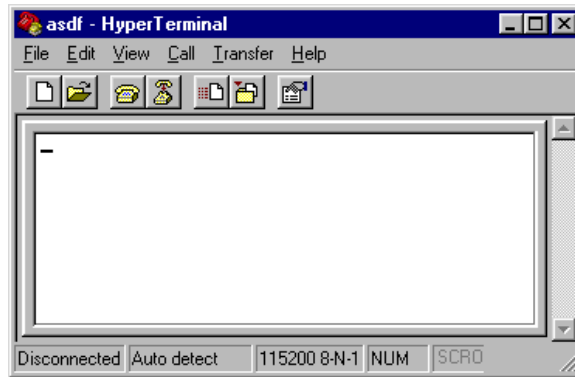
Other Details:

Connectivity Test

The procedures “Phone/IP Starter Configuration” and “Phonebook Starter Configuration” must be completed before you can do this procedure.

1. These connections must be made:
 - MultiVOIP to local phone station
 - OR–
 - MultiVOIP to extension of key phone system
 - MultiVOIP to command PC
 - MultiVOIP to Internet
2. Inbound Phonebook and Outbound Phonebook must both be set up with at least one entry in each. These entries must allow for connection between two voip units.
3. Console messages must be enabled. (If this has not been done already, go, in the MultiVOIP GUI, to Configuration | Logs and select the “Console Messages” checkbox.

4. You now need to free up the COM port connection (currently being used by the MultiVOIP program) so that the HyperTerminal program can use it. To do this, you can either (a) click on **Connection** in the sidebar and select “Disconnect” from the drop-down box, or (b) close down the MultiVOIP program altogether.
5. Open the **HyperTerminal** program.



6. Use HyperTerminal to receive and record console messages from the MultiVOIP unit. To do so, set up HyperTerminal as follows (setup shown is for Windows NT4; details will differ slightly in other MS operating systems):

In the upper toolbar of the HyperTerminal screen, click on the **Properties** button.

In the "Connect To" tab of the **Connection Properties** dialog box, click on the **Configure** button.

In the next dialog box, on the "General" tab, set "Maximum Speed" to 115200 bps.

On the "Connection" tab, set connection preferences to:

Data bits: 8

Parity: none

Stop bits: 1

Click **OK** twice to exit settings dialog boxes.

7. Make VOIP call on a local phone line accessing PSTN directly or through key system..
8. Read console messages recorded on HyperTerminal.

Console Messages from **Originating VOIP**. The voip unit that originates the call will send back messages like that shown below.

```
[00026975] CAS[0] : RX : ABCD = 1, 1, 1, 1,Pstn
           State[1] TimeStamp : 26975
[00027190] CAS[0] : TX : ABCD = 1, 1, 1, 1
[00027190] PSTN: cas seizure detected on 0
[00027440] CAS[0] : TX : ABCD = 0, 0, 0, 0
[00033290] PSTN:call detected on 0
           num=17637175662*
[00033290] H323IF[0]:destAddr =
           TA:200.2.10.5:1720,NAME:Mounds
           View,TEL:17637175662,17637175662
[00033290] H323IF[0]:srcAddr = NAME:New
           York,TA:200.2.9.20
[00033440] H323IF [0]:cmCallStateProceeding
[00033500] H323[0]: Remote Information (Q931):
           MultiVOIP - T1
[00033565] CAS[0] : TX : ABCD = 1, 1, 1, 1
[00033675] H323IF [0]: MasterSlaveStatus=Slave
[00033675] H323IF[0]:FastStart Setup Not Used
[00033690] CAS[0] : TX : ABCD = 1, 1, 1, 1
[00033755] H323IF[0]: Coder used 'g7231'
[00033810] PSTN:pstn call connected on 0
```

8. (cont'd)

Console Messages from **Terminating VOIP**. The voip unit connected to the phone where the call is answered will send back messages like that shown below.

```
[00170860] H323[0]: New incoming call
[00170860] PSTNIF : Placing call on channel 0
                Outbound digit 7175662
[00170885] CAS[0] : TX : ABCD = 1, 1, 1, 1
[00171095] H323IF [0]: MasterSlaveStatus=Master
[00171105] CAS[0] : RX : ABCD = 1, 1, 1, 1,Pstn
                State[7] TimeStamp : 171105
[00171105] H323IF[0]: Coder used 'g7231'
[00171110] H323IF[0]:FastStart Setup Not Used
[00171110] H323IF[0]: Already opened the outgoing
                logical channel
[00171110] H323IF[0]: Coder used 'g7231'
[00171315] CAS[0] : RX : ABCD = 0, 0, 0, 0,Pstn
                State[9] TimeStamp : 171315
[00172275] PSTN: dialing digit ended on 0
[00172285] PSTN: pstn proceeding indication on 0
[00172995] CAS[0] : RX : ABCD = 1, 1, 1, 1,Pstn
                State[12] TimeStamp : 172995
[00173660] CAS[0] : TX : ABCD = 1, 1, 1, 1
[00173760] PSTN:pstn call connected on 0
```

Connectivity Test

9. When you see the following message, end-to-end voip connectivity has been achieved.

“PSTN: pstn call connected on X”

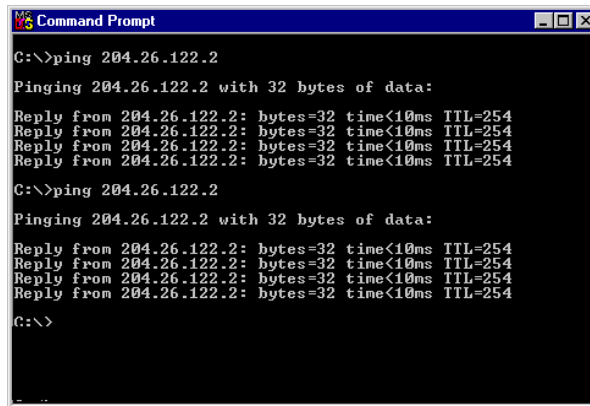
where x is the number of the voip channel carrying the call

10. If the HyperTerminal messages do not confirm connectivity, go to the *Troubleshooting* procedure below.

Troubleshooting

If you cannot establish connectivity between two voips in the system, follow the steps below to determine the problem.

1. Ping both MultiVOIP units to confirm connectivity to the network.



```

C:\>ping 204.26.122.2
Pinging 204.26.122.2 with 32 bytes of data:
Reply from 204.26.122.2: bytes=32 time<10ms TTL=254
Reply from 204.26.122.2: bytes=32 time<10ms TTL=254
Reply from 204.26.122.2: bytes=32 time<10ms TTL=254
Reply from 204.26.122.2: bytes=32 time<10ms TTL=254
C:\>ping 204.26.122.2
Pinging 204.26.122.2 with 32 bytes of data:
Reply from 204.26.122.2: bytes=32 time<10ms TTL=254
Reply from 204.26.122.2: bytes=32 time<10ms TTL=254
Reply from 204.26.122.2: bytes=32 time<10ms TTL=254
Reply from 204.26.122.2: bytes=32 time<10ms TTL=254
C:\>
  
```

2. Verify the telephone connections.
 - Check cabling. Are connections well seated? To correct receptacle?
 - Are telephone Interface Parameter settings correct?
3. Verify phonebook configuration.

4. Observe console messages while placing a call. Look for error messages indicating phonebook problems, network problems, voice-coder mismatches, etc.

Patents

This Product is covered by one or more of the following
U.S. Patent Numbers: *5.301.274; 5.309.562; 5.355.365;*
5.355.653; 5.452.289; 5.453.986. Other Patents Pending.



S000355A
